Test Equipment Solutions Datasheet

Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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FLUKE®

ScopeMeter® 190 Series
ScopeMeter 123

Technical Data

ScopeMeter 190 Series: Speed, performance and analysis power

For demanding applications, the ScopeMeter 190 Series high-performance oscilloscopes offer specifications usually found on top-end bench instruments. With up to 200 MHz bandwidth, 2.5 GS/s real-time sampling and a deep memory of 27,500 points per input, they're ideal for engineers who need the full capabilities of a high-performance scope in a handheld, battery powered instrument.

- ☑ Dual input – 60, 100 or 200 MHz bandwidth
- ☑ Up to 2.5 GS/s real-time sampling per input
- ☑ Connect-and-View™ automatic triggering, a full range of manual trigger modes plus external triggering
- ☑ 27,500 points per input record length using ScopeRecord™ mode
- ☑ Automatic capture and replay of 100 screens
- ☑ 24 automatic waveform measurements
- ☑ Cursors, zoom and real-time clock
- ☑ Four hours rechargeable NiMH battery pack
- ☑ 1,000V CAT II and 600V CAT III safety certified
- ☑ Up to 1,000V independently floating isolated inputs
- ☑ Includes a 5,000 counts True-rms multimeter and a TrendPlot™ paperless recorder

ScopeMeter 123: Three-in-one simplicity

The compact ScopeMeter 123 is the rugged solution for industrial troubleshooting and installation applications. It's a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control and power systems.

- ☑ A dual input 20 MHz digital oscilloscope
- ☑ Two 5,000 counts True-rms digital multimeters
- ☑ A dual input TrendPlot™ recorder
- ☑ Connect-and-View™ trigger simplicity for hands-off operation
- ☑ Shielded test leads for oscilloscope, resistance and continuity measurements
- ☑ Up to five hours battery operation
- ☑ 600V CAT III safety certified
- ☑ Optically isolated RS-232 interface
- ☑ Rugged compact case

Connect and View

QUALITY MANAGEMENT SYSTEM FLUKE ISO 9001 CERTIFIED TO MEET ISO 9001

LISTED

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Technical Specifications ScopeMeter 190 Series

Oscilloscope Mode

Vertical deflection

	Fluke 199	Fluke 196	Fluke 192
Bandwidth	200 MHz	100 MHz	60 MHz
Rise time	1.7 ns	3.5 ns	5.8 ns

Bandwidth limiter: User selectable 10 kHz or 20 MHz
Number of inputs: 2 plus external trigger. All isolated from each other and ground.
Input coupling: AC, DC with ground level indicator
Input sensitivity: 5 mV/div to 100 V/div
Input voltage: See general specifications for maximum rating
Vertical resolution: 8 bit
Accuracy: ±(1.5% of reading + 0.04 x range/div)
Input impedance: 1 MΩ ± 1% // 15 pF ± 2 pF

Horizontal

	Fluke 199	Fluke 196	Fluke 192
Maximum real-time sample rate	2.5 GS/s	1 GS/s	500 MS/s
Number of digitizers	2	2	2
Time base range	5 ns/div to 5 s/div		10 ns/div to 5 s/div

Maximum record length: 1,000 points per input
27,500 points per input in ScopeRecord™ roll mode (10 ms/div ... 2 min/div)
Accuracy: ± (0.01% of reading + 1 pixel)
Glitch capture: 50 nsec (5 µsec/div to 1 min/div)
Faster time bases have higher sample rates than 20 MS/s

Display and acquisition

Display modes: Input A, input B, dual, average, persistence, invert, replay
Acquisition modes: Normal, auto, single shot, ScopeRecord™ roll, glitch capture

Trigger and delay

Source: Input A, input B, external trigger input. All input references isolated from each other and ground.
Modes: Automatic Connect-and-View™ free run, single shot, edge, delay, video, video line, selectable pulse width
Connect-and-View™: Advanced automatic triggering that recognizes signal patterns, automatically sets up and continuously adjusts triggering, time base and amplitude. Automatically displays stable waveforms of complex and dynamic signals like motor drive and control signals.
Video triggering: NTSC, PAL, PAL+, SECAM. Includes field 1 and 2 and line select.
Pulse width triggering: Pulse width qualified by time. Allows for triggering $<t$, $>t$, $=t$, $\neq t$, where t is selectable in minimal steps of 0.01 div or 50 nsec.
Time delay: 9 divisions pre-trigger view to 1,000 divisions trigger delay

Automatic capture of 100 screens

The instrument ALWAYS memorizes last 100 screens (no user interaction or setup required). When an anomaly occurs on screen, there's 10 seconds to press HOLD and review it. If one sets up the instrument for triggering on glitches or intermittent anomalies the unit operates in "baby-sit" mode and will capture 100 events.
Replay: Manual or continuous replay. Displays the captured 100 screens as a "live" animation. The contents can also be viewed by manually scrolling backwards and forwards "screen by screen".
Replay storage: Up to 2 sets of 100 screens can be saved for later recall and analysis.

Automatic scope measurements

VDC, VAC rms, VAC+DC, Vpeak max, Vpeak min, Vpeak to peak, frequency (Hz), positive pulse width, negative pulse width, positive duty cycle, negative duty cycle, amp AC, amp DC, amp AC+DC, power factor, watts, VA, VA reactive, phase, temperature °C, temperature °F, dBV, dBm into 50Ω and 600Ω

Cursor measurements

Source: Input A or B
Dual horizontal lines: Voltage at cursor 1 and 2, voltage between cursors
Dual vertical lines: Time between cursors, voltage between markers
Single vertical line: Min-Max and Average voltage at cursor position

Zoom

Up to 8x horizontal zoom

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Meter Mode

Via 4 mm banana inputs. Fully isolated from scope inputs and scope ground. The specified accuracy is valid over the temperature range 18 °C to 28 °C (15 °F to 33 °F). Add 10 % of specified accuracy for each degree °C below 18 °C or above 28 °C (15 °F to 33 °F).

Maximum resolution
5,000 counts

Voltmeter ranges
500mV, 5V, 50V, 500V, 1,000V

Accuracy
VDC: ± (0.5 % + 5 counts)
VAC true rms
15 Hz to 60 Hz: ± (1 % + 10 counts)
60 Hz to 1 kHz: ± (2.5 % + 15 counts)
VAC+DC true rms
DC to 60 Hz: ± (1 % + 10 counts)
60 Hz to 1 kHz: ± (2.5 % + 15 counts)

Ohms
Ranges: 500Ω, 5kΩ, 50kΩ, 500kΩ, 5MΩ, 30MΩ
Accuracy: ± (0.6 % + 5 counts)

Other meter functions
Continuity: Beeper on < 30Ω (± 10Ω)
Diode test: Up to 2.8V
Amps: Amp DC, Amp AC, Amp AC+DC using an optional current clamp or shunt. Scaling factors: 0.1 mV/Amp to 100 V/Amp
Temperature (°C, °F): With optional accessories. Scale factors 1 mV/°C or 1 mV/°F
Input impedance: 1 MΩ ± 1% // 10 pF ± 2 pF
Advanced meter functions: Auto/manual ranging, relative measurements (Zero reference), TrendPlot recording

Recorder Mode

ScopeRecord-roll mode
Dual input waveform storage mode.
Source and display: Input A, Input B, Dual
Memory depth: 27,500 points per input. Each point consist of Min-Max pair.
Min-Max values: Min-Max values are measured at high sample rate ensuring capture and display of glitches

Time base range	10 ms/div to 1 min/div	2 min/div
Recorded timespan	11 sec to 15 hrs	30 hrs
Glitch capture	50 nsec	250 nsec
Sample rate	20 MS/s	4 MS/s
Resolution	400 µsec to 2 sec	4 sec

Recording modes: Single sweep, continuous roll, start on external trigger
Horizontal scale: Time from start, time of day
Zoom: Up to 100 x zoom
Memory: Up to 2 dual input ScopeRecordings can be saved for later recall and analysis

TrendPlot™ recording
Dual input electronic paperless chart recorder. Plots, displays and stores meter and scope measurements.
Source and display: Input A, Input B and DMM input
Memory depth: 13,500 points record per input. Per record point a minimum, maximum and average value, and a time and date stamp are stored.
Ranges: 10 s/div to 20 min/div in normal view mode. 10 min/div to 24 hour/div in view-all mode (overview of total record)
Recorded timespan: Up to 8 days with a resolution of 1 minute
Recording mode: Continuous roll
Measurement speed: 2.5 measurements per second maximum
Horizontal scale: Time from start, time of day
Zoom: Up to 64x zoom
Memory: Up to 2 TrendPlot recordings can be saved for later recall and analysis

Cursor measurements – All Recorder Modes
Source: Input A, B or DMM input
Dual vertical lines: Min-Max or Average voltage. Time between cursors.
Single vertical line: Min-Max or Average voltage. Absolute date and time or time from start.

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Technical Specifications ScopeMeter 190 Series cont.

General Specifications

Case
Design: Rugged, shock proof with integrated protective holster
Drip and dust proof: IP51 according to IEC529
Shock and vibration: Shock 30g, Vibration 3g according to MIL 28800F type III, class 3, style B

Display
Bright LCD with CCFL backlight, 35/60 cd/m2 without/with power adapter.
Size: 105 x 79 mm (4.1 x 3.1 inches)
Resolution: 240 x 240 pixels
Contrast and brightness: User adjustable, temperature compensated

Memory Save and Recall
Scope memories: 10 memory locations that each can contain two waveforms plus corresponding setup.
Recorder memories: 2 memory locations that each can contain 100 captured dual input scope screens, or a dual input ScopeRecord (27,500 Min-Max pairs per input), or a dual input Trendplot (13,500 Min-Max pairs per input).

Real-time clock
Time and date stamp for ScopeRecord, 100 captured screens and Trendplots.

Power
Line power: Country specific line voltage adapter/battery charger included
Battery power: Rechargeable NiMH (installed)
Battery operating time: 4 hours
Battery charging time: 4 hours
Battery power saving functions: Auto power down with adjustable power down time. On screen battery power indicator

Mechanical data
Size: 256 x 169 x 64 mm (10.1 x 6.6 x 2.5 inches)
Weight: 1.95 kg (4.3 lbs)

Safety
Compliance: EN61010-1 (1993) Pollution degree 2, UL 3111-1 (1994), CAN/CSA C22.2 No.1010.1 (1992), ANSI/ISA S82.01 (1994)

Input voltage ratings
Maximum probe voltage: 1,000V CAT II, 600V CAT III (Maximum voltage between 10:1 probe tip (VP190) and reference lead)
Floating voltage: 1,000V CAT II, 600V CAT III (Maximum voltage between earth ground and any terminal (signal input or shielding))
Independently isolated: 1,000V CAT II, 600V CAT III inputs (Maximum voltage between any terminal of one input or probe (VP190) and any other terminal of another input or probe (VP190))
Maximum voltage on BNC input directly (input A or B): 300V CAT III
Maximum voltage on meter input: 1,000V CAT II, 600V CAT III

Environmental
Operating temperature: 0 °C to +50 °C
Storage temperature: -20 °C to +60 °C
Humidity
10 °C to 30 °C: 95% RH non condensing
30 °C to 40 °C: 75% RH non condensing
40 °C to 50 °C: 45% RH non condensing
Maximum operating altitude: 3,000 m (10,000 feet)
Maximum storage altitude: 12 km (40,000 feet)
Electro-Magnetic Compatibility: EN 61326-1 for emission and immunity

Optically isolated PC/Printer interface
To printer: Supports HP Laserjet,® Deskjet,® Epson FX/LQ and postscript printers via optional PAC 91
To PC: Transfer instrument settings, screen images and waveform data, compatible with FlukeView® software for Windows® via optional PM9080.

Warranty
3 years

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Technical Specifications ScopeMeter 123

Oscilloscope Mode

Vertical deflection

Bandwidth: 20 MHz at inputs; 20 MHz with BB120 and optional PM 8918/VP190 10:1 probes; 12.5 MHz with STL120 1:1 test leads
Rise time: 17.5 ns
Number of inputs: 2
Input coupling: AC, DC with ground level indicator
Input sensitivity: 5 mV to 500 V/div (with included STL120 shielded test leads measure up to 600 Vrms)
Vertical resolution: 8 bit
Accuracy: ± (2% of reading + 0.05 x range/div)
Input impedance: 1 MΩ ± 1% // 225 pF with STL120 shielded test leads; 1 MΩ ± 1% // 20 pF ± 3 pF with BB120

Horizontal

Maximum sample rate: 1.25 GS/s for repetitive signals; 25 MS/s for single shot
Number of digitizers: 2
Time base range: 20 ns/div to 1 min/div
Maximum record length: 512 Min-Max points per input
Accuracy: ± (0.1% of reading + 1 pixel)
Glitch detect: 40 ns

Display and acquisition

Display modes: Input A, input A and B, envelope, smooth
Acquisition modes: Normal, single shot, roll, glitch capture (always on)

Trigger and delay

Source: Input A, input B, external via optional ITP120
Modes: Automatic Connect-and-View,™ Free Run, Edge, Single Shot, Video, Video Line
Connect-and-View™: Advanced automatic triggering that recognizes signal patterns and automatically sets up and continuously adjusts triggering, time base and amplitude. Automatically displays stable pictures of complex and dynamic signals like motor drive and control signals.
Video triggering: NTSC, PAL, PAL+, SECAM. Includes line select
Time delay: Up to 10 divisions pre-trigger view

Measurements

VDC, VAC, VAC+DC, Vpeak max, Vpeak min, Vpeak to peak, frequency (Hz), positive pulse width, negative pulse width, positive duty cycle, negative duty cycle, Amp AC, Amp DC, Amp AC+DC, Phase, Temperature °C, Temperature °F, dBV, dBm into 50Ω and 600Ω. (Amps, °C or °F with optional probes)

Dual Input Meter

The specified accuracy is valid over the temperature range 18°C to 28°C (15°F to 33°F). Add 10 % of specified accuracy for each degree °C below 18°C or above 28°C (15°F to 33°F).

Max. meter bandwidth: 20 MHz

VDC

Ranges: 500mV, 5V, 50V, 500V, 1,250V
Max. resolution: 5,000 counts
Accuracy: ± (0.5% + 5 counts)

VAC rms

Ranges: 500mV, 5V, 50V, 500V, 1,250V
Max. resolution: 5,000 counts
Accuracy:
1 Hz to 60 Hz: ±(1% + 10 counts)
60 Hz to 1 kHz: ±(2.5% + 15 counts)
20 kHz to 1 MHz (5% + 20 counts)

VAC+DC true rms

Ranges: 500mV, 5V, 50V, 500V, 1,250V
Max. resolution: 5,000 counts
Accuracy:
DC to 60 Hz: ±(1% + 10 counts)
60 Hz to 1 kHz: ±(2.5% + 15 counts)
20 kHz to 1 MHz (5% + 20 counts)

Ohms

Ranges: 500Ω, 5 kΩ, 50 kΩ, 500 kΩ, 5 MΩ, 30 MΩ
Max. resolution: 5,000 counts
Accuracy: ± (0.6% of reading + 5 counts)

Capacitance

Ranges: 50 nF to 500 µF
Max. resolution: 5,000 counts
Accuracy: ± (2% of reading + 10 counts)

Other meter functions

Frequency: Up to 40 MHz
Continuity: Beeper on < 30Ω
Diode test: Up to 2.8V
Amps: Amp DC, Amp AC, Amp AC+DC using an optional current clamp or shunt
Scaling factors: 0.1 mV/Amp to 100 V/Amp
Temperature (°C, °F): With optional accessories. Scale factors 1 mV/°C or 1 mV/°F.
Number of inputs: 2
Input impedance: 1 MΩ ± 1% // 10 pF ± 2 pF
Advanced meter functions: Auto/manual ranging, TouchHold®, Relative measurements (zero reference), TrendPlot recording

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Instrument Sale and Rental

Technical Specifications ScopeMeter 123 cont.

Recorder Mode

Trendplot™ recording
Dual input electronic paperless chart recorder. Plots and displays the actual, minimum, maximum and average of any measurement.
Source and display: Input A, Input A and B
Range: 15 s/div till 2 days per division (automatic)
Recorded timespan: Up to 16 days with a resolution of 1.5 hours
Recording mode: Continuous with automatic vertical scaling and horizontal time compression
Measurement speed: 2.5 measurements per second maximum
Horizontal scale: Time from start

General Specifications

Case
Design: Rugged, shock proof with integrated protective holster
Drip and dust proof: IP51 according to IEC529
Shock and vibration: Shock 30g, Vibration 3g according to MIL-T28800E, Type III, Class 3, Style B

Display
Bright LCD with CCFL backlight, 35/60 cd/m2 without/with adapter
Size: 72 x 72mm (2.8 x 2.8 inch)
Resolution: 240 x 240 pixels
Contrast and brightness: User adjustable, temperature compensated

Memory Save and Recall
2 screens, 10 user setups

Real-time clock
Time and date stamp TrendPlot recording

Power
Line power: Country specific line voltage adapter/battery charger included
Battery power: Rechargeable NiCd (installed)
Battery operating time: Up to 5 hours
Battery charging time: 4 hours
Battery refresh cycle: 8 to 14 hours depending on remaining capacity at start of refresh cycle
Battery power saving functions: Auto power down with adjustable power down time. On screen battery power indicator.

Mechanical data
Size: 50 x 115 x 232 mm (2 x 4.5 x 9.1 inches)
Weight: 1.2 kg (2.5 lb.)

Safety
Compliance: EN61010.1 (1993) Pollution degree 2, UL3111-1 (1994), CAN/CSA-C22.2 No. 1010.1 (1992), ANSI/ISA S82.01 (1994)

Input voltage ratings
Maximum input voltage: 600V CAT III
(Maximum voltage between input and reference lead)
Floating voltage: 600V CAT III
Maximum voltage between earth ground and any terminal (signal input or reference lead)
Maximum voltage between reference leads:
Instrument has common grounds connected via self recovering fault protection. For different ground potential measurements between inputs use DP120 differential voltage probe.

Environmental
Operating temperature: 0°C to +50°C
Storage temperature: -20°C to +60°C
Humidity:
10°C to 30°C, 95% RH non condensing;
30°C to 40°C, 75% RH non condensing;
40°C to 50°C, 45% RH non condensing
Maximum operating altitude: 2,000m (6,500 feet); 3,000m (10,000 feet) voltages ≤ 400V
Maximum storage altitude: 12 km (40,000 feet)
Electro-Magnetic: Emission EN50081-1 (EN55022 and EN60555-2)
Compatibility: Immunity EN50082-2 (IEC1000-4-2, -3, -4, -5)

Optically isolated PC/Printer interface
To printer: Supports HP Laserjet,® Deskjet,® Epson FX/LQ and postscript printers via optional PAC91
To PC: Transfer instrument settings, screen images and data, compatible with FlukeView® software for Windows® via optional PM9080

Warranty
3 years

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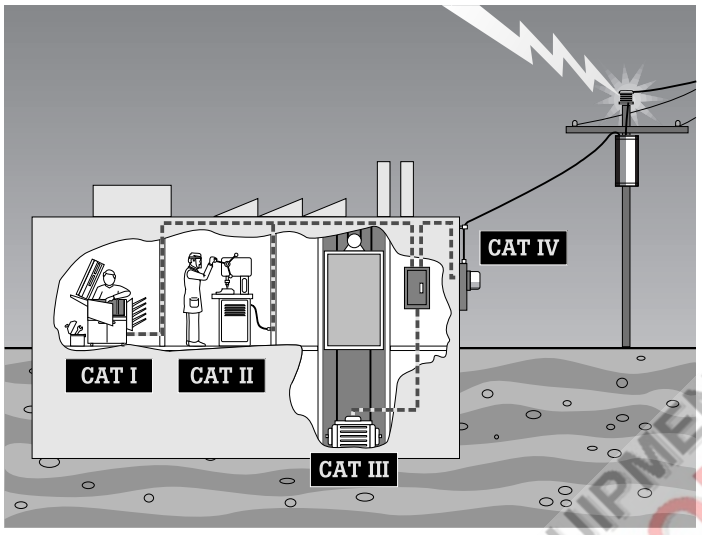
International Safety Standards



To protect your instrument and – more importantly – yourself, choose a test tool that can withstand the electrical hazards present in the environment in which you plan to use it. EN61010 establishes international safety requirements for electrical measurement equipment. It separates the various electrical environments into installation categories based on the danger from high voltage-energy transients. To choose the right tool, the voltage rating alone does not determine the safety. It is the combination of voltage rating and installation category that determines maximum transient withstand capability of the tool. CAT III rated instruments are recommended for measurement on industrial power distribution systems.

Overvoltage Category	Summary description
CAT IV	Three phase at utility connection, any outdoors conductors (under 1,000V) • Outside and service entrance • Service drop from pole to building • Run between meter and panel • Overhead line to detached building • Underground line to well pump
CAT III	Three-phase distribution (under 1,000V), including single phase commercial lighting and distribution panels • Feeders and short branch circuits • Distribution panel devices • Heavy appliance outlets with "short" connections to service entrance
CAT II	Single-phase receptable connected loads • Outlets and long branch circuits • All outlets at more than 10m (30 ft.) from Category III source • All outlets at more than 20m (60 ft.) from Category IV source
CAT I	Electronic • Electronic equipment • Low energy equipment with transient limiting protection

Ordering Information

FLK-192	Fluke 192 ScopeMeter (60 MHz)
FLK-192S	Fluke 192 ScopeMeter (60 MHz) with SCC190 kit
FLK-196	Fluke 196 ScopeMeter (100 MHz)
FLK-196S	Fluke 196 ScopeMeter (100 MHz) with SCC190 kit
FLK-199	Fluke 199 ScopeMeter (200 MHz)
FLK-199S	Fluke 199 ScopeMeter (200 MHz) with SCC190 kit
SCC190	Software – Cable – Case kit for Fluke 190 Series
FLK-123	Fluke 123 Industrial ScopeMeter
FLK-123S	Fluke 123 Industrial ScopeMeter with SCC120 kit
SCC120	Software – Cable – Case kit for Fluke 123

- Fluke ScopeMeter test tools come standard with a complete accessory package including line voltage adapter, and battery pack (installed). ScopeMeter 123 includes the shielded test leads, ScopeMeter 190 Series comes with probes, probe accessories and multimeter test leads.
- SCC kit includes: Hard-shell carrying case, optically isolated RS-232 interface cable, and FlukeView® for Windows® software.

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Accessories

Standard accessories:	190 Series	123
Rechargeable battery pack (installed)	BP190	BP120
Line voltage adapter / battery charger	BC190	PM 8907
Two probes, red & gray	VP190-R & VP190-G	–
Two shielded test-leads, red & gray	–	STL120
Test lead, black	- (*1)	TL75
Two hook clips, black	- (*1)	HC120
Three alligator clips	- (*2)	AC120
Shielded banana to BNC adapter		BB120
Probe accessory Set, red & gray	AS190 - R/G (*2)	–
User's manual	9 language versions	13 language versions
Optional accessories and replacements: (*3)		
Safety designed oscilloscope probes		
Differential voltage probe	DP120	DP120
Optically isolated trigger probe	–	ITP120
10:1 Voltage probe red or grey	VP190-R or VP190-G (*4)	
Probe accessory set red or grey	AS190-R or AS190-G (*4)	
Probe replacement set	RS190	
Safety designed test leads		
Hard point right angle test lead set	TL75	
Test lead set	TL20	
Hook clips for use with TL75 & STL120	HC120	
Alligator clips for use with TL75 & STL120	AC120	
Pin-grabber test clips for banana plug	AC83	
Large jaw alligator clips for banana plug	AC85A	
Hook style clips for banana plug	AC80	
Alligator clips for banana plug	AC20	
Industrial test probes for banana plug	TP20	
Electronic test probes for banana plug	TP80	
Test probe flat blade for banana plug	TP1	
Test probe 2mm for banana plug	TP2	
Test probe 4mm for banana plug	TP4	
Current probes		
AC/DC current probe 50mA to 100A	80i-110s (*4)	
AC current probe 0.1A to 1,000A	80i-1000s (*4)	
Flexible AC current probe 1A to 2,000A	i2000flex (*4)	
AC current probe 1A to 3,000A	i3000s (*4)	
AC current probe 1A to 200A	i200s (*4)	
Current shunt 4-20mA	CS20MA	
Temperature probes		
Universal temperature probe	80T-150U	
Thermocouple module	80TK	
Infrared temperature probe	80T-IR	
Cables and adapters		
Printer adapter cable	PAC91	
Optically isolated RS-232 adapter/cable	PM 9080/001 (*6)	
Dual banana plug to female BNC adapter	PM 9081/001	
Dual banana jack to male BNC adapter	PM 9082/001	
1.5m 50Ω coaxial BNC cable	PM 9091/001	
Male BNC to female BNC adapter	PM 9093/001	
Protective cases		
Software cable case package	SCC190 (*5)	SCC120 (*5)
Hard carrying case	C190 (*6)	C120 (*6)
Soft carrying case	C195	C125
PC software		
FlukeView software for Windows®	SW90W/033EFG (*5)	

(*1) Probe accessory VP190 set includes test leads, hook clips.
(*2) The Fluke 196 and 199 include red and grey probe, accessory set AS190, with 4 heavy duty alligator clips.
(*3) This is a selection of a broader range of optional accessories that support ScopeMeter products, for information on additional available accessories, contact your Fluke distributor.
(*4) Connects to BNC, for connection to Fluke 123 input use BB120.
(*5) Software Cable Case Package includes RS-232 cable, FlukeView software & hard carrying case.
(*6) Included in SCC package.

Fluke. *Keeping your world up and running.*

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Specifications subject to change without notice.
Printed in U.S.A. 7/99 1280619 D-ENG-P Rev A

Printed on recycled paper.

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